

## CLAIMS

What is claimed is:

1. A multilayer light emitting device, comprising:

an electron emitting layer;

5 an insulating layer over the electron emitting layer; and

a light emitting layer over the insulating layer;

wherein electrons emitted from the electron emitting layer pass through the insulating layer and into the light emitting layer and are converted into bandgap radiation by the light emitting layer.

2. A light emitting device as recited in claim 1, wherein said electron emitting layer comprises polysilicon.

3. A light emitting device as recited in claim 1, wherein said insulating layer comprises SiO<sub>2</sub>.

4. A light emitting device as recited in claim 1, wherein said light emitting layer comprises GaInP.

5. A light emitting device as recited in claim 1, wherein said insulating layer and said electron emitting layer comprise in combination an oxidized polysilicon layer.

6. A multilayer light emitting device, comprising:  
an oxidized polysilicon layer; and  
a light emitting layer over said oxidized polysilicon layer;  
wherein electrons emitted from the oxidized polysilicon layer are converted into  
5 bandgap radiation by the light emitting layer.

7. A light emitting device as recited in claim 6, wherein said light emitting  
layer comprises GaInP.

8. A multilayer light emitting device, comprising:  
an oxidized polysilicon layer; and  
a GaInP layer over said oxidized polysilicon layer.

9. A light emitting device as recited in claim 8, wherein electrons emitted  
from the oxidized polysilicon layer are converted into bandgap radiation by the GaInP  
layer.

10. A multilayer light emitting device, comprising:  
an oxidized polysilicon layer; and  
20 a direct bandgap semiconductor layer over said oxidized polysilicon layer.

11. A light emitting device as recited in claim 10, wherein electrons emitted from the oxidized polysilicon layer are converted into bandgap radiation by the direct bandgap layer.

5 12. A light emitting device as recited in claim 11, wherein said direct bandgap layer comprises GaInP.

13. A multilayer light emitting device, comprising:  
an electron emitting layer; and  
a GaInP layer over said electron emitting layer.

14. A light emitting device as recited in claim 13, wherein electrons emitted from the electron emitting layer are converted into bandgap radiation by the GaInP layer.

15. A light emitting device as recited in claim 13, wherein said electron emitting layer comprises oxidized polysilicon.

16. A light emitting panel comprising a plurality of devices as recited in any of  
20 claims 1, 6, 8, 10 and 13 arranged in a mosaic array.

17. A method for generating light emission in a multilayer light emitting device, comprising:

injecting electrons from an electron emitting layer through an insulating layer and into a light emitting layer where said electrons are converted into to bandgap radiation.

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18. A method as recited in claim 17, wherein said electron emitting layer comprises polysilicon.

19. A method as recited in claim 17, wherein said insulating layer comprises SiO<sub>2</sub>.

20. A method as recited in claim 17, wherein said light emitting layer comprises GaInP.

21. A method as recited in claim 17, wherein said insulating layer and said electron emitting layer comprise in combination an oxidized polysilicon layer.

22. A method for generating light emission in a multilayer light emitting device, comprising:

injecting electrons from an oxidized polysilicon layer into a light emitting layer where said electrons are converted into to bandgap radiation.

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23. A method as recited in claim 22, wherein said light emitting layer comprises GaInP.

24. A method for generating light emission in a multilayer light emitting device,  
5 comprising:

injecting electrons from an oxidized polysilicon layer into a GaInP layer where said electrons are converted into to bandgap radiation.

25. A method for generating light emission in a multilayer light emitting device,  
10 comprising:

injecting electrons from an oxidized polysilicon layer into a direct bandgap semiconductor layer where said electrons are converted into to bandgap radiation.

26. A method as recited in claim 25, wherein said direct bandgap layer  
15 comprises GaInP.

27. A method for generating light emission in a multilayer light emitting device,  
comprising:

injecting electrons from an electron emitting layer into a GaInP layer where said  
20 electrons are converted into to bandgap radiation.

28. A method as recited in claim 27, wherein said electron emitting layer comprises oxidized polysilicon.